ABSTRACT

The invention encompasses a method and apparatus for producing high-purity metals (such as, for example, high-purity cobalt), and also encompasses the high-purity metals so produced. The method can comprise a combination of electrolysis and ion exchange followed by melting to produce cobalt of a desired purity. The method can result in the production of high-purity cobalt comprising total metallic impurities of less than 50 ppm. Individual elemental impurities of the produced cobalt can be follows: Na and K less than 0.5 ppm each, Fe less than 10 ppm, Ni less than 5 ppm, Cr less than 1 ppm, Ti less than 3 ppm and O less than 450 ppm.